

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The Office Action dated December 10, 2008, has been received and its contents carefully reviewed.

By this response, claims 13 and 28 are hereby amended. Claims 23-25 and 33 are deleted. No new matter is added. Accordingly, claims 13, 16, 18, 28-30, 32, and 34-37 are currently pending. Reexamination and reconsideration of the pending claims is respectfully requested.

In the Office Action, Claims 13, 16, 18, 23-25, 28-30 and 32-37 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moinpour et al. (U.S. Patent No. 5,901,399, hereinafter “Moinpour”) in view of Fishkin et al. (U.S. Patent No. 6,202,658, hereinafter “Fishkin”) and Hashimoto et al. (U.S. Patent No. 6,261,378, hereinafter “Hashimoto”).

Applicants respectfully traverse the rejections of claim 13 and reconsideration is respectfully requested. Claim 13 is allowable at least in that each of these claims recites, inter alia, “second step, individually brushing two opposing side surfaces among the four side surfaces of the substrate parallel to the linear direction of the substrate with two cylindrical brushes that rotate based on an axis of rotation, wherein the axis of rotation is substantially parallel to the movement direction of the substrate and the cylindrical brushes are rotated to a direction perpendicular to the movement direction of the substrate; fourth step, individually jetting deionized water that carries ultrasonic waves with a pair of sonars onto the two opposite side surfaces of the substrate, and wherein the jetting of deionized water is respectively performed to the two opposite side surfaces of the substrate that the brushings of the two opposite side surfaces are performed”.

Applicants respectfully traverse the rejections of claim 28. Claim 28 is allowable at least in that each of the claims recites, inter alia, “second step, individually brushing at least two opposing side surfaces among the four side surfaces of the substrate parallel to the movement direction of the substrate with cleaning brushes that rotate based on an axis of rotation, wherein the axis of rotation is substantially parallel to the movement direction of the substrate and the cylindrical brushes are rotated to a direction perpendicular to the movement direction of the substrate; fourth step, individually spraying water that carries ultrasonic waves with a pair of

sonars onto the at least two opposite side surfaces of the substrate, and wherein the spraying of water is respectively performed to the two opposite side surfaces of the substrate that the brushings of the two opposite side surfaces are performed".

In Moinpour and Fishkin, wafer has one side surface along the surrounding of a cylindrical shape. Thus, this one side surface is brushed using one side brush. On the contrary, substrate of the claimed invention has four side surfaces. Two opposite side surfaces among four side surfaces of the substrate are individually brushed. In other words, one side surface is brushed using one cylindrical brush, and another side surface is brushed using another cylindrical brush.

In Moinpour and Fishkin, one side surface is jetted using one or two jets. On the contrary, water is individually jetted with a pair of sonars onto two opposite side surfaces. In other words, one side surface is jetted using one sonar, and another side surface is jetted using another sonar.

In Moinpour, brushing of edge cleaning apparatus 204 and jetting of water jet 235 are performed simultaneously. In addition, Fishkin fails to disclose brushing of side surface. On the contrary, jetting of water is performed to two opposite side surfaces that undergo brushings of the two opposite side surfaces, respectively.

In Moinpour, edge cleaning apparatus 204 is rotated to the same direction as or an opposite direction to a rotation direction of wafer 202. Thus, brushings of Moinpour are performed along the same direction as or an opposite direction to the rotation direction of wafer 202. On the contrary, cylindrical brushes of the claimed invention are rotated to a direction perpendicular to the movement direction of the substrate. Thus, brushings are performed from upper direction to lower direction or from lower direction to upper direction with respect to two opposite side surfaces.

Thus, the combination of Moinpour and Fishkin cannot obtain these features of the claimed invention.

None of the cited references, singly or in combination, fails to teach or suggest at least these features of the claimed invention. In addition, the claimed invention has a remarkable effect that cannot be obtained or reached over the cited references.

Accordingly, Applicant respectfully submits that claims 13, and 28 and claims 16, 18, 29-30, 32, and 34-37, which depend therefrom, are allowable over the cited references.

Applicants believe the foregoing amendments and remarks place the application in condition for allowance and early, favorable action is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

Respectfully submitted,

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